CONTENTS

Imperial College London Meeting

Demonstrations

Three-dimensional reconstruction of lesions in the rat brain
M.J. Watson, V.A. Moss and O. Holmes 2

Wide-field volume visualization of thick microscope sections by computed nearest neighbour deconvolutions
N.F. Clinch, C.J. Daly, J.F. Gordon, V.A. Moss and N.C. Spurway 3

Communications

Human neutrophil elastase and polylysine increase junctional solute permeability in umbilical vein endothelial cell monolayers perfused in microcarrier culture
V.J. Toothill, B.M. Eaton, J.D. Pearson and G.E. Mann 4

Spatial variations in the permeability of the luminal surfaces of large blood vessels of the rabbit
M.T. Jay and M.J. Lever 5

Contribution of active and passive ion transport to the potential difference (PD) across *in situ* pial microvessels in anaesthetized rats
Patricia A. Revest, Hazel C. Jones and N. Joan Abbott 6

The changes in hydraulic permeability and porous area of walls of mesenteric microvessels of pithed frogs during acute inflammation
C.R. Neal and Geraldine Clough 7

Microvascular closing pressures of the vasa recta in the renal medulla of the anaesthetized rat
P.J. MacPhee and C.C. Michel 8

Effect of long-term muscle overload on capillary supply, blood flow and performance in rat fast muscle
S. Egginton and O. Hudlická 9

The influence of vasopressin on the venous vessels of muscle during systemic hypoxia in the anaesthetized rat
Janice Marshall and Rubina Mian 10

Vasoactive effects of basic and acidic fibroblast growth factors on arteriolar vessels in the cheek pouch of the anaesthetized hamster
Margaret D. Brown, Olga Hudlická, David Damon and Brian R. Duling 11

Prostaglandin E_2 produces presynaptic inhibition of carotid-baroreflex-induced vasoconstriction in skeletal muscle of anaesthetized dogs
H.J. Ballard and F.I. Achike 12

The response of human nailfold capillary pressure to an increase in brachial artery blood pressure
A.C. Shore, D.D. Sandeman and J.E. Tooke 13

Human interstitial fluid pressure and arm volume following breast cancer treatment
D.O. Bates, J.R. Levick and P.S. Mortimer 14

Vascular submandibular responses to stimulation of the sympathetic innervation in the presence of an inhibitor of EDRF synthesis in anaesthetized cats
J.R. Garrett and A.V. Edwards 15

Inhibition of nitric oxide production in anaesthetized dogs fails to modify work-induced increases in coronary blood flow
A. Vegh, L. Szekeres and J.R. Parratt 16

Measurement of local arterial pulse wave velocity in a human subject by a comb-excitation magnetic resonance imaging (MRI) technique
C.L. Dumoulin, D.J. Doorly and C.G. Caro 17

Effect of vasomotor tone on the hydraulic conductivity and reflection coefficient of the medial layers of isolated rabbit aorta and carotid artery
M.J. Lever, M.T. Jay, F. Debaer and G. Thome 18

Short-time cardiovascular responses to a sudden increase in peripheral vascular resistance in humans, with and without parasympathetic blockade
K. Toska, M. Eriksen and L. Walløe 19

An evaluation of the use of edge detection when measuring atherosclerotic plaque from ultrasound images in man
M. Holloway, R. Kitney, S. Renton and A. Nicolaides 20

The effect of calcitonin on intracellular free calcium levels in depolarized guinea-pig ventricular myocytes
J.S. Gill, V.S. Shankar, C.M.R. Bax, F. Lu, B.S. Moonga, M. Zaidi and A.J. Camm 21

Effect of propafenone on the calcium current in guinea-pig ventricular myocytes
J.S. Gill, F. Lu, W.J. McKenna, A.J. Camm 22

The effect of cyclosporine-A on excitation-contraction coupling in isolated rat cardiac trabeculae
Hamid S. Banijamali, Mark H.C. ter Keurs, Leendert C. Paul and Henk E.D.J. ter Keurs 23

Digital image processing of human x-ray and MR breast images
S.L. Free, K. Straughan and A.W. Goode 24

The effects of ageing on muscle strength in men and women
K.M. Rook, S.K. Phillips, S.A. Bruce and R.C. Woledge 25

Localized cooling can reduce essential tremor in man
L.A. Arblaster, M. Lakie and R.C. Roberts 26

Analysis of unstable cardiorespiratory waveforms by the frequency tracking locus in human preterm infants
R.I. Kitney, S. Bignall and N. Saw 27

Regional distribution of ventilation-perfusion ratio ($\dot{V}/\dot{Q}$ ratio) in the goat
J. Kramer-Johansen, T. Flatebø, M.N. Melsom, P.O. Iversen, C. Müller and G. Nicolaysen 28

Strain gauge plethysmographic (MSG) assessment of the effect of large pressure steps on the time course of the vascular compliance response of human limbs
John Gamble and Ivor B. Gartside 29

Is human cortico-spinal control of ventilation as precise as control of hand movement?
P. Heywood, K. Murphy, B. Strong, A. Belyavin, E. Farmer and A. Guz 30

Changes in circulating white blood cells and platelets following eccentric exercise in man
M. Gleeson, J. Almey and R. Cave 31

Synchronization of CA3 pyramidal neurons by NMDA-mediated excitatory synaptic potentials in hippocampal slices incubated in low Mg^{2+} solutions
J.G.R. Jefferys and R.D. Traub 32

Long-term depression (LTD) of synaptic transmission in isolated rat hippocampal slices can be induced postsynaptically in an anti-Hebbian paradigm by depolarizing current pulses
G. Christofi, A.V. Nowicky, J. Ray, H. Khan and L.J. Bindman 33

Maintenance of fetal rat CNS and recovery from injury *in vitro*
P. Balkwill, M.D. Habgood, G. Knott, K. Møllgård, N.R. Saunders and J.M. Treherne 34

The effect of altered sodium intake on neurohypophysial function in the rat
R.J. Windle, Jeanette M. Judah and Mary L. Forsling 35

The frog optic tectum *in vitro*: differential effects of the NMDA receptor antagonist DL-2-amino-5-phosphonovaleric acid (APV) on postsynaptic potentials
S.G. Brickley, S. Grant and J.H. Williams 36

5-HT depolarizes and induces oscillations in rat sympathetic preganglionic neurones *in vitro*
A.E. Pickering, D. Spanswick and S.D. Logan 37

100 Hz sampling of the kinetics of dopamine release and re-uptake in isolated rat nucleus accumbens using continuous scan cyclic voltammetry (CSCV)
J. Millar, J.J. O'Connor, S.J. Trout and Z.L. Kruk 38

Equiluminance stimuli elicit low frequency temporal responses in human vision
P.J. Brent and M.Y. Kelani 39

Spatial vision during motion in the absence of vestibular functions in man
A. Bronstein, K.H. Ruddock and D.S. Wooding 40

The delay in transmitting language information through human visual cortex
V.E. Amassian, P.J. Maccabee, R.Q. Cracco, J.B. Cracco, A.P. Rudell and L. Eberle 41

Life-span changes in the visual acuity of the Japanese quail
J.-Y. Lee, M.B.A. Djamgoz, W. Hodos, A.L. Holden and V. Porciatti 42

Regulation of cutaneous C fibre heat nociceptors by nerve growth factor in the developing rat
Gary R. Lewin and Lorne M. Mendell 43

Impairment of nerve conduction by microneurography electrodes in the anaesthetized rat
Andrew Rice, Stephen McMahon and Patrick Wall 44

The effect of antagonistic voluntary movement on F wave modulation in man
P.M. Cross, M.D. Craggs and P.N. Leigh 45

Effects of n-Hexane on the transient potassium current (I_A) in isolated *Helix* neurones
J.P. Winpenny, J.R. Elliott and A.A. Harper 46

Confocal microscopy of the isolated lizard neuromuscular junction: calcium oscillations in resting synaptic boutons
Naomi Melamed, Paul Johannes Helm and Rami Rahamimoff 47

Pharmacological definition of the calcium current (I_{Ca}) component inhibited by neurotransmitters in rodent neuroblastoma x glioma hybrid (NG 108-15) cells
M.P. Caulfield, J. Robbins and D.A. Brown 48

Calcium entry through nicotinic channels in dissociated rat superior cervical ganglion (SCG) cells
J. Trouslard, S.J. Marsh and D.A. Brown 49

Differences in the repriming kinetics of TTX-sensitive and TTX-resistant sodium currents in cells isolated from adult rat dorsal root ganglia
A.A. Elliott and J.R. Elliott 50

Pressure-activated whole-cell currents in isolated outer hair cells from the guinea-pig
J.E. Gale and J.F. Ashmore 51

Voltage- and current-clamp recordings of light-evoked transient amacrine cell responses in isolated retinae of carp
M.B.A. Djamgoz , J.C. Low, T. Saito and M. Yamada 52

McN-A-343 has an antagonistic action at cholinergic receptors on rat jejunal and ileal enterocytes
S.A. Przyborski, R.J. Levin and A. Young 53

Inhibition of excitatory junction potentials in isolated guinea-pig vas deferens by suramin
P. Sneddon 54

Effects of hypoxia and metabolic inhibition on isolated human detrusor smooth muscle
P.J. Thomas and C.H. Fry 55

Increased uptake of low density lipoprotein induced by adrenaline in the aortae of unrestrained rats
L.E. Cardona-Sanclemente, P. Gorog and G.V.R. Born 56

Calcium influx evoked by 2,5-di-(t-butyl)-1,4-benzohydroquinone in Fura-2-loaded human platelets is reduced by inhibitors of cytochrome P 450
P. Sargeant, W.D. Clarkson, S.O. Sage and J.W.M. Heemskerk 57

Transepithelial potential and resistance of the isolated rabbit and bovine lens epithelia
Jin Jun Zhang and T.J.C. Jacob 58

DIDS shows substrate-like behaviour for the bile acid transporter of human placental basal membrane vesicles
N. Eleno, J.J.G. Marin and C.A.R. Boyd 59

Study comparing the impedance characteristics of isolated normal and proteoglycan-depleted bovine articular cartilage
M. Levinkind, T.J. VanderNoot and D. O'Hare 60

Poster Communications

Contribution of ion permeability and transport at the brain endothelium to the DC potential between blood and CSF
N. Joan Abbott and A.M. Butt 61

A technique for spatio-temporal visualization of footfall patterns in the walking rat
K.A. Clarke 62

The spatial relationship between intercellular clefts and gaps in the endothelium of inflamed mesenteric microvessels of pithed frogs
C.R. Neal, Geraldine Clough and C.C. Michel 63

Protective effect of adenosine in lices of rat olfactory cortex during anoxia
K.M. Donaghy and C.N. Scholfield 64

Endothelial cell–cell contacts in mammalian continuous capillaries: evidence for the existence of regularly spaced, cleft-spanning structures
C. Schulze, L. Leach, J.A. Firth and K. Haldenby 65

Endothelial cell–cell contacts in continuous mammalian capillaries: the tight junction
L. Leach, B.J. Ward, C. Schulze and J.A. Firth 66

Prolongation of survival time of an isolated perfused rat brain by concomitant perfusion with an isolated perfused rat liver
B. Alexander, M. Aslam and I.S. Benjamin 67

The H_3 antagonist thoperamide inhibits the permeability effects of histamine in rat microvessels via an H_1 receptor effect
Alison J. Pile and Laurence H. Smaje 68

Manchester Meeting

Demonstrations

Computer-based visuo-motor tracking system
F.W.J. Cody, Brenda Lovgreen and W. Schady 70

A PC-driven servo-controlled fluid replacement technique for renal function studies in conscious rats
M. Shalmi, W.J. Burgess, I. Abu Amarah, M. Evans, S. Christensen, R.J. Balment and J.C. Atherton 71

Use of FM radio telemetry to record human electromyograms during 'dry' slope skiing
J.R. Banks, Ed Gardner, Brenda Lovgreen and Helen C. Richardson 72

Isolation and characterization of individual striated ducts from the rabbit mandibular salivary gland
R.L. Evans, K.R. Lau and R.M. Case 73

Continuous measurement of intracellular water content in the isolated, perfused rat mandibular salivary gland by proton NMR spectroscopy
J.B. Larcombe-McDouall, P. Brownbill and M.C. Steward 74

Assessment of rat jejunal circular muscle activity in response to intraluminal balloon inflation
A.D. Higham, D.G. Thompson and E.C. Griffiths 75

Communications

Neuroscience practical instruction utilizing workstations
J. Banks and A.C. Wareham 76

Chronic K^+-loading of frogs raises the set point of the Na^+–H^+ exchanger in isolated early distal tubules
G.J. Cooper and M. Hunter 77

Depolarization-activated whole-cell conductance in single proximal cells isolated from frog kidney is blocked by gadolinium
L. Robson and M. Hunter 78

A micropuncture study of the effect of amiloride on segmental lithium reabsorption in anaesthetized rats
D.G. Shirley, S.J. Walter and B. Sampson 79

Effect of changes in oxalate concentration on fluid reabsorption in the proximal convoluted tubule of the anaesthetized rat
M. Wareing and R. Green 80

Evidence for involvement of a dynein-like motor in vasopressin action in the isolated toad urinary bladder
D. Marples, B. Barber and A. Taylor 81

Natriuretic effect of arginine vasopressin (AVP) in chronically instrumented, conscious rats: fact or artifact?
J. Plange-Rhule and J.C. Atherton 82

Do prostaglandins affect renal calcium handling? – a study in conscious rats
P.J.N. Rothwell and A.C. Buck 83

Relationship between urinary aluminium and calcium excretion in the rat
C.J. Lote, H. Saunders, J.A. Wood and A.J. Spencer 84

The effect of water restriction during adaptation to a low sodium diet in man
M. Sutters and W.S. Peart 85

Suppression of angiotensin II is important in the early increase in natriuresis after saline infusion in man
D.R.J. Singer, N.D. Markandu, J.J. Morton and G.A. MacGregor 86

Sodium retaining action of arginine-vasopressin (AVP) in hydrated man
F.H. Noormohamed and A.F. Lant 87

The renal response to systemic hypoxia in the anaesthetized rat
Marie Neylon, E.J. Johns and Janice M. Marshall 88

Natriuretic peptide receptors and the growth of fetal brain
J. Brown and Z. Zuo 89

Atrial natriuretic factor (ANF) secretion from isolated guinea-pig atrial strips
P.F. Speake, S. Pirie and R. Green 90

In vitro atrial natriuretic peptide- (ANP) stimulated cGMP production in nephrons from seawater- (SW) and freshwater- (FW) adapted euryhaline fish
R.J. Sainsbury, M.N. Perrott and R.J. Balment 91

Cyclic guanosine monophosphate (cGMP) production stimulated in isolated rat glomeruli by natriuretic peptides
J. Brown and Z. Zuo 92

Renal and endocrine effects of atrial natriuretic peptide (ANP) in conscious Brattleboro (DI) and Long Evans (LE) rats
W.J. Burgess and R.J. Balment 93

Mechanisms of chloride transport across the *in situ* perfused placenta of the anaesthetized rat
J. Stulc, S.M. Husain, R.D.H. Boyd and C.P. Sibley 94

Electrolyte transport by primary monolayer cultures of human endometrial glandular epithelial cells
C. Jane Matthews, Christopher P.F. Redfern, Eric J. Thomas and Barry H. Hirst 95

Acetylcholine and di(tert-butyl)-hydroquinone evoke spatially distinct patterns of intracellular Ca release in isolated rat lacrimal acinar cells
A.C. Elliott, S.P. Cairns and D.G. Allen 96

Osmotic water permeability of acinar cell membranes in the isolated perfused rat mandibular salivary gland
M.C. Steward, J.B. Larcombe-McDouall and T. Nakahari 97

Stimulation *in vitro* of rat pancreatic enzyme synthesis by pancreatic polypeptide and peptide YY
J.K. Ripley and R.M. Case 98

Protein kinase C has an inhibitory role in the control of fluid secretion in isolated rat pancreatic ducts
N. Ashton, R.L. Evans and B.E. Argent 99

Effects of nerve stimulation and secretin on exocrine pancreatic secretion in the rat *in vivo* and *in vitro*
D. Wisdom, J. Singh, G.M. Salido, J.A. Pariente, R. Lennard and P.J. Camello ... 100

Expression and localization of Na^+ pump isoforms in rat skeletal muscle and L6 muscle cells: effect of insulin
H.S. Hundal, Y. Mitsumoto, A. Marette, T. Ramlal and A. Klip 101

The enteric nervous system is involved in the maintained hypersecretory response of the small intestine to *E. coli STa* in chronic undernourished rats *in vitro*
Helen Nzegwu and R.J. Levin 102

Time course of changes in gastric histidine decarboxylase mRNA and plasma gastrin, with fasting and feeding in the rat
R. Dimaline, A.K. Sandvik and D. Evans 103

Neuronal regulation of enhanced body sway in man
V. Dietz, M. Discher and M. Trippel 104

Electromyographic activities in wrist muscles of parkinsonian and healthy human subjects during clinical evaluation of rigidity
R.J. Meara and F.W.J. Cody 105

Resonance at the wrist in patients with rheumatoid arthritis
E.G. Walsh, U. Dalvi, C.M. Lambert and G. Nuki 106

Patterns of central motor reorganization in children with hemiplegic cerebral palsy
L.J. Carr, L.M. Harrison, A.L. Evans and J.A. Stephens 107

Patterns of fascicular projections after loss of somatosensory input in humans
W. Schady 108

Near threshold electrical and magnetic transcranial stimuli activate overlapping sets of cortical neurones in humans
J.C. Rothwell, B.L. Day and V.E. Amassian 109

Are Renshaw cells tonically active in humans?
R. Mazzocchio and A. Rossi 110

Effects of stimulation in the locus coeruleus and raphe nuclei on transmission in group II reflex pathways of the anaesthetized cat
E. Jankowska, J.S. Riddell, B. Skoog and B.R. Noga 111

Phosphorus metabolite concentration profiles of three human hand muscles
D.L. Turner, D.B. McIntyre, D.A. Jones and D.J. Newham 112

The length dependency of fatigue in the human tibialis anterior muscle
P. Sacco 113

Morphological abnormalities in isolated skeletal muscle of dystrophic mice
M. Hussain 114

Changes in capillary ultrastructure, blood flow and muscle performance during development of collateral circulation in rat fast muscles
Ruth A. Hughes and Olga Hudlicka 115

Maximal oxygen uptake ($\dot{V}_{O_2,max}$) measured with powered treadmill, cycle ergometry and self-powered treadmill in man
M.T. Sweeney, M.A. Calleja, M. Keegan, I.T. Campbell and M.K. Davies 116

Does central inhibition contribute to fatigue resulting from maximal dynamic contractions in man?
C. James and P. Sacco 117

The effect of diet and exercise on plasma amino acid concentrations in man
W. Wilson, R.J. Maughan and I. Davidson 118

The effect of alcohol, at two times of day, on the distribution of relative power within the frequency spectrum of the human EEG
F. Robertson, K.I. Hume and D.J. O'Boyle 119

Assessing the endogenous component of circadian rhythms in humans
D.S. Minors and J.M. Waterhouse 120

Opioid inhibition of electrogenic flare in anaesthetized pigs is blocked by μ receptor antagonists
D.C.M. Taylor, K. Faulstroh and Fr.-K. Pierau 121

Interleukin-1 receptor antagonist inhibits ischaemic and excitotoxic brain damage in the rat
Jane K. Relton and Nancy J. Rothwell 122

Inhibition of nitric oxide synthase potentiates the behavioural effects of interleukin-1
R.M. Bluthé, S. Sparber, S. Kent and R. Dantzer 123

Role of interleukin-1 in the behavioural effects of lipopolysaccharide in the rat
S. Kent, R.M. Bluthe, K.W. Kelley and R. Dantzer 124

Effect of interleukin-1 receptor antagonist on fever and thermogenesis induced by interleukin-1 in the rat
Nancy J. Rothwell and Anthea J. Hardwick 125

Continuous measurement of oxygen tension in the isolated guinea-pig heart using a purpose designed oxygen electrode
A.M. McAinsh, D. O'Hare, D.J. Sheridan and C.P. Winlove 126

An estimate of the relative contributions of the sarcoplasmic reticulum and calcium current to contraction of isolated rat ventricular myocytes
A. Varro, S.B. Hester and D.A. Eisner 127

Correlation between action potential parameters and the size of single sino-atrial node cells isolated from the rabbit heart
H. Honjo and M.R. Boyett 128

Comparison of the effects of BRL 38227 and nifedipine on intracellular calcium levels in isolated mesenteric resistance vessels of the rat
D.N. Criddle, I.A. Greenwood and A.H. Weston 129

Nerve-induced and myogenically propagated relaxation of skin muscle (*Octopus vulgaris*)
A. Packard 130

Basilar membrane mechanics stimulated by extracellular currents in the isolated cochlea of the guinea-pig
F. Mammano and J.F. Ashmore 131

Renal handling of magnesium in man: effects of acid/base balance, bumetanide and acetazolamide
J.C. Atherton, P. Hargreaves, J. Hartshorn, R. Priest and L. Woo 132

Poster Communications

Effects of gentamycin and tobramycin on renal calcium and magnesium handling in anaesthetized Fischer 344 rats
T.J. Birdsey, L.M. Oakes and H.O. Garland 133

Autoregulation of perfusion through the renal cortex and papilla of Wistar and stroke-prone spontaneously hypertensive rats
C. Huang, G. Davis and E.J. Johns 134

Renal tubular lithium reabsorption in anaesthetized, potassium-depleted rats
S.J. Walter, J.-C. Janssen, H.L. Sturmer, J. Skinner and D.G. Shirley 135

Use of lithium in renal investigations: minimizing the impact on renal function
F.H. Noormohamed and A.F. Lant 136

Sodium balance, blood volume and glomerular hyperfiltration in streptozotocin-treated diabetic rats
A.J. McVicar 137

Expression of nephron-segment-specific phenotypes in cultured human renal cell lines
J.A. Charlton and N.L. Simmons 138

Aldosterone induces apical Na^+ channels in surface but not crypt cells of rat distal colon
R. Lomax and G.I. Sandle 139

Is it possible to learn a new timing in a sequential movement in man?
D. De Jaeger and D. Boisacq-Schepens 140

Direct effects of the β_2-agonist clenbuterol on contractions of isolated mouse skeletal muscle
E.T. Agbenyega and A.C. Wareham 141

Effect of clenbuterol on skeletal muscle atrophy in rats and mice induced by immobilization and by glucocorticoid treatment
E.T. Agbenyega and A.C. Wareham 142

Primary afferent depolarization of group II muscle afferent terminals evoked by stimulation in the locus coeruleus and raphe nuclei of the anaesthetized cat
J.S. Riddell, E. Jankowska and J. Huber 143

Changes in the isolated basolateral potassium conductance induced by acetylcholine (ACh) in isolated sheep tracheal epithelium
Sarah K. Inglis, Martyn R. Ward and Mercedes Acevedo 144

Effects of diisothiocyano-2-2-disulfonic stilbene (DIDS), diphenylamine-2-carboxylate (DPC) and furosemide on chloride transport across human placental microvillus membrane vesicles (MVV)
S. Byrne, J.D. Glazier, D. Mahendran, D. Edwards and C.P. Sibley 145

Pharmacological properties of eclosion muscles in *Sarcophaga bullata*
G. Bothe and J.A. Miyan 146

Modulation of feeding motor output by the neuropeptide, APGWamide, in the isolated central nervous system of *Lymnaea stagnalis*
C.R. McCrohan and R.P. Croll 147

Segmental homology of peptidergic neurones in grasshoppers
K.S.J. Thompson, J.P. Bacon and N.M. Tyrer 148

Bristol Meeting

Demonstrations

A mechanism for provoking voluntary changes to ongoing locomotion in the cat
D.E. Marple-Horvat, A.J. Amos, D.M. Armstrong and J.M. Criado 150

The use of a customized image analysis software package in investigations of branching patterns in cat cerebellar afferent pathways
Judy R. Trott and Richard Apps 151

A method for automatic identification of periods of muscular activity from EMG recordings in the mammal
D.E. Marple-Horvat and S.L. Gilbey 152

Optical fibre fluorescence system for intracellular Ca^{2+} measurement: one lamp and filter wheel supplies two set-ups
Roger C. Thomas and Christof J. Schwiening 153

Temperature dependence of tension in relaxed (glycerinated rabbit psoas) muscle fibres
K.W. Ranatunga 154

Effect of hydrostatic pressure on low angle X-ray scattering by isolated frog muscle during contraction
M.A. Geeves, K.W. Ranatunga and P.J. Knight 155

Improved separation of sulphinic and sulphonic amino acids from rat brain
J.M. Jefferson, G.A. Thompson and I.C. Kilpatrick 156

A method for obtaining a high yield of healthy myocytes from the ventricle and atrioventricular node of isolated rabbit hearts
Allan J. Levi, Chin O. Lee, Jules Hancox, Jon Issberner and Xuemin Wang 157

Rapid changes of extracellular solution combined with measurements of contraction in isolated ventricular myocytes from the rat heart
Allan J. Levi, Jules Hancox and Paul Brooksby 158

Calibration of the fluorescent indicator SBFI for intracellular sodium in ventricular myocytes isolated from rabbit and rat hearts
Allan J. Levi, Chin O. Lee and Paul Brooksby 159

Patch permeabilization with staphylococcal α-toxin in whole cell recording
K. Khodakhah, T.D. Carter, K. Török, D. Ogden and S. Smith 160

A simple method for producing monoclonal antibodies to small quantities of tissue
M.C. Holley 161

Determination of free intracellular amino acids in ventricular biopsies taken from patients undergoing heart surgery
M.S. Suleiman, K. Fernando, W. Dihmis, J. Hutter and R.A. Chapman 162

Measurement of the recovery from an acid load in the isolated guinea-pig papillary muscle in media free of divalent cations
K.R. Chatamra, M.S. Suleiman and R.A. Chapman 163

Metabolic changes in isolated guinea-pig ventricular myocytes during calcium depletion and repletion as detected with a fluorescent technique
K.K. Minezaki, M.S. Suleiman and R.A. Chapman 164

A perfusion system for exchanging the intracellular solution of single guinea-pig ventricular myocytes
D.K. Mistry and R.A. Chapman 165

An *in situ* preparation of the crayfish thoracic nervous system to study neuro-muscular properties of reflex subgroups of leg motoneurones
B.M.H. Bush, P. Skorupski, G.J. Murphy, S.A. Cayzer and B.M. Rawat 166

Selective effects of octopamine within a crayfish motor pool
Peter Skorupski and Brian M.H. Bush 167

Specificity of transneuronal signals after peripheral nerve injury investigated in anaesthetized rats
S.J.W. Lisney, Emma J. Massey and Poppy E. Raven 168

A computer-controlled Michelson interferometer for the analysis of basilar membrane mechanics
F. Mammano and J.F. Ashmore 169

Using transputers to measure calcium changes in isolated cochlear cells
P.J. Kolston and J.F. Ashmore 170

Effects of electrical stimulation of teeth on blood flow in dental pulp in man
N. Vongsavan and B. Matthews 171

A method for obtaining a continuous record of very small volume flow rates of fluids
N. Vongsavan and B. Matthews 172

Studies on the permeability of cat dentine *in vivo* and *in vitro*
N. De Francesco and B. Matthews 173

A technique for chronic recording from subnucleus caudalis in cats using microwires
D. Banks, M. Kuriakose and B. Matthews 174

Physiology and morphology of regenerated rat skeletal muscle
D.M. Lewis and H. Schmalbruch 175

Use of digital fluorescence imaging to monitor the behaviour of the lipophilic membrane probe TMA (trimethylammoniodiphenylhexatriene) in isolated bovine anterior pituitary cells
S.J.V. Stafford, S.L. Shorte and J.G. Schofield 175

Patch pipette recording of dorsal root-evoked synaptic activity in dorsal horn neurones of rodent *in vitro* spinal preparations
J.F. Blake and R.H Evans 175

High performance liquid chromatography profiles for bradykinin, kallidin and a kinin antagonist (HOE 140)
Alison Bond, Kanti Bhoola and Paul Dieppe 175

Confocal laser scanning images of neutrophils: the circulating tranporter of kallikreins and kininogens
Lydia Henderson, Kanti Bhoola, Carlos Figueroa and Werner Müller-Esterl 175

Communications

Effect of ICI D7114, a selective β_3-adrenoceptor agonist, on brown adipose tissue lipogenesis in CBA/Ca obese mice
M. Al-Qatari and P.V. Taberner 176

Inhibition of $GABA_B$ modulation of calcium channel currents in cultured rat dorsal root ganglion neurones by loading replated cells with anti-G protein antibodies
A.S. Menon-Johansson and A.C. Dolphin 177

Ca^{2+} release from intracellular stores magnifies the Ca^{2+} signal which permeates dendritic NMDA channels following synaptic activation of CA1 hippocampal neurones *in vitro*
S. Alford, B.G. Frenguelli and G.L. Collingridge 178

Induction of rhythmic oscillations in rat sympathetic preganglionic neurones (SPN) *in vitro* by a metabotropic-like excitatory amino acid receptor
D. Spanswick, A.E. Pickering, I.C. Gibson and S.D. Logan 179

High frequency stimulation of the Schaffer collateral–commissural pathway is associated with a transient depression of the presynaptic fibre volley in rat hippocampal slices *in vitro*
Z.I. Bashir 180

Pharmacological segregation of visual responses in the dorsolateral geniculate nucleus (dLGN) of the anaesthetized rat
G. Scott and R. Mason 181

Anion efflux associated with electrogenic glutamate uptake into Müller cells isolated from the tiger salamander retina
Muriel Bouvier, Alessandra Amato, Marek Szatkowski and David Attwell 182

Estimated conductance of synaptic glutamate channels activated during EPSCs in rat cerebellar granule cells in thin slices
Stephen F. Traynelis, R. Angus Silver and Stuart G. Cull-Candy 183

Comparison of quinoxalinedione antagonist potency at non-NMDA receptors of rat primary afferent C fibres *in vitro*
F. Brugger and R.H. Evans 184

Enantiomer-specific depressant actions of 4-carboxy-3-hydroxyphenylglycine on mono- and polysynaptic excitation in the isolated newborn rat spinal cord
E.F. Birse, K.N. Mewett, P.C.-K. Pook, K. Tyrell, P.M. Udvarhelyi, B. Wharton and J.C. Watkins 185

The effect of high pressure on the quisqualate-sensitive glutamate receptor channel of locust (*Schistocerca gregaria*) muscle
A.G. Macdonald, J. Drewry, R.L. Ramsey, C. Shelton and P.N.R. Usherwood 186

Fractional rate of dye signal decrease as an aid in assessing membrane permeability
Christof J. Schwiening and Walter F. Boron 187

Depolarization-induced $[Ca^{2+}]_i$ changes in regenerating axons of rat cultured dorsal root ganglion cells
Futwan Al-Mohanna and Stephen Bolsover 188

Mapping of $[Ca^{2+}]_i$ in regenerating axons of rat isolated dorsal root ganglion cells
Alessandra Amato and Stephen Bolsover 189

Anomalous decrease in rate of transient outward current inactivation with membrane depolarization in neurones cultured from rat cortex
G.R. Seabrook and J.A. Kemp 190

Methoxyflurane and methohexitone modulate the decay of voltage-activated calcium currents in cultured bovine adrenal chromaffin cells
P. Charlesworth, G. Pocock and C.D. Richards 191

Properties of a large conductance potassium channel in rat hippocampal neurones maintained in culture
K.T. Wann and C.D. Richards 192

Caffeine inhibition of ACh nicotinic currents in the human skeletal muscle (TE671) cell line not mediated by cyclic AMP/Ca^{2+}_i
R. Barrett-Jolley, N.G. Byrne, J. Newsom-Davis and A. Vincent 193

Measurement of intracellular free magnesium in isolated guinea-pig papillary muscles and ventricular myocytes
Shuhau Chen, C.H. Fry, Hana Illner, Elisabeth Kickenweiz, J.A.S. McGuigan, T. Powell and V.W. Twist 194

Taurine in isolated newborn guinea-pig hearts during the calcium paradox
M.S. Suleiman 195

The action of 2,3-butanedione monoxime (BDM), pyridine-2-aldoxime (norPAM) and pyridine-2-aldoxime methochloride (PAM) on the inactivation of the L-type calcium current in isolated guinea-pig ventricular myocytes
R.A. Chapman 196

Intracellular GTPγS inhibits L-type Ca^{2+} channel activation by isoprenaline or photoreleased GTPγS in guinea-pig ventricular myocytes
R.Z. Kozlowski, L.J. Goodstadt, V.W. Twist and T. Powell 197

Excitatory connections from pyramids to interneurones studied using double intracellular recordings in slices of rat neocortex
Alex M. Thomson, David C. West and Jim Deuchars 198

A region of 5'-flanking DNA from the rat preprotachykinin-A gene which directs high-level expression in cultured rat dorsal root ganglion neurones transfected by microinjection of plasmid DNA
P.K. Mulderry, K. Chapman, V. Lyons and A.J. Harmar 199

A comparison of the effect of diazepam and tizanidine on synaptically evoked primary afferent depolarization in the rat spinal cord *in vitro*
R.J. Siarey, S.K. Long and R.H. Evans 200

Withdrawal from *in vivo* chronic ethanol treatment increases APV-sensitive transmission in isolated mouse hippocampal slices
M.A. Whittington, H.J. Little and J.D.C. Lambert 201

Membrane and morphological properties of C cells in rat dorsal root ganglia studied *in vitro*
I. Nagy, L. Urban and C.J. Woolf 202

Selective activation of single vagal C fibres by capsaicin and bradykinin in the guinea-pig trachea *in vitro*
A.J. Fox, P.J. Barnes, L. Urban and A. Dray 203

Inhibition of nociceptor activity by receptor-selective opioids studied in an isolated skin–nerve preparation from hyperalgesic rat
N. Andreev and A. Dray 204

Chronic tendon injury in horses reduces their noxious pressure thresholds and response to analgesics
J.P. Chambers, A. Livingston, A.E. Waterman and A.E. Goodship 205

Relationship between sleep stages and the beat variability measured from ECG R–R intervals in sleep-deprived human subjects
P.O.O. Julu, R.S. Delamont and G.A. Jamal 206

Correlation of the components of the reflex modulation of force with the underlying EMG in a human cutaneomuscular reflex
P. Evans, D.M.P. Harries and P.J. Harrison 207

Use of TMA-DPH (trimethylammonio-diphenylhexatriene) to monitor secretory responses of isolated bovine anterior pituitary cells
S.L. Shorte, M. Bamford, S.J.V. Stafford, V.J. Collett and J.G. Schofield 208

Expression of neuropeptide messenger RNAs in rat dorsal root ganglia during development of adjuvant monoarthritis *in vivo*
L.F. Donaldson, D.S. McQueen and J.R. Seckl 209

Oxytocin secretory responses to hypernatraemia and inhibition by morphine in pregnant urethane-anaesthetized rats
P.M. Bull and J.A. Russell 210

Intracerebroventricular injection of muscimol or bicuculline inhibits the milk ejection reflex in the anaesthetized rat
D. Voisin, A.E. Herbison and D.A. Poulain 211

Sexually dimorphic localization of oestrogen receptors within neurotensin-immunoreactive neurones in sections of the rat preoptic area
Allan E. Herbison and Dionysia T. Theodosis 212

Effect of sex steroids on 11β-hydroxysteroid dehydrogenase in rat liver, kidney and hippocampus *in vivo*
S.C. Low, S.N. Assad, C.R.W. Edwards and J.R. Seckl 213

Inhibition of spontaneous and synaptically evoked activity of supraoptic neurones in the anaesthetized rat by μ- and κ-selective opioids in anaesthetized rats
K.M. Pumford, G. Leng and J.A. Russell 214

Stimulus patterning and growth hormone (GH) secretion in male rats
S.L. Dickson, G. Leng and I.C.A.F. Robinson 215

Growth hormone (GH) binding protein in the normal and GH-deficient dwarf rat
L.M.S. Carlsson, D.F. Carmignac, R.G. Clark, I.C.A.F. Robinson and T. Wells 216

Effect of corticosteroid hormones on potassium currents of rat CA1 hippocampal neurons *in vitro*
Henk Karst, Wytse J. Wadman and Marian Joëls 217

Transfection of calbindin D28K alters calcium entry and intracellular calcium dynamics in the GH3 cell line
P.M. Lledo, B. Somasundaram, A.J. Morton, P.C. Emson and W.T. Mason 218

Further investigations into Doppler angle dependence
A.A. Bharath and R.I. Kitney 219

The role of vasopressin (AVP) in the cardiovascular response evoked by hypocapnic- and normocapnic-hypoxia in the anaesthetized rat
Anne-Marie Louwerse, Janice M. Marshall and Mary L. Forsling 220

The effects of indirect warming on forearm vasculature in normal human subjects
Junette Mohan and Janice M. Marshall 221

The effects of left ventricular diastolic pressure and volume on diastolic coronary flow in the isovolumically beating heart in the anaesthetized dog
Donatella Gattullo, R.J. Linden, G. Losano, P. Pagliaro, P. Vono and N. Westerhof 222

Demonstration of substance P-containing axons in synaptic contact with vagal preganglionic neurones in the nucleus ambiguus of the anaesthetized rat
J. Deuchars, K.M. Spyer and P.N. Izzo 223

Inhibition of carotid sinus baroreceptor neurones in the nucleus tractus solitarius of the anaesthetized cat by electrical stimulation of hindlimb afferent fibres
Sarah E. McMahon, Peter N. McWilliam, James Robertson and Jean C. Kaye 224

Activity of inspiratory neurones in the nucleus ambiguus (NA) during the cough reflex at different respiratory loading resistances in the decerebrate cat
M.S. Dawid-Milner, J.P. Lara, A. Milan and S. Gonzalez-Baron 225

Inhibition of membrane potential oscillations in rat sympathetic preganglionic neurones *in vitro* by noradrenaline
A.E. Pickering, D. Spanswick, I.C. Gibson and S.D. Logan 226

Does Ca influx via Na–Ca exchange trigger intracellular Ca release and contraction in isolated rat ventricular myocytes?
Paul Brooksby and Allan J. Levi 227

Raising P_{CO_2} elevates $[Ca^{2+}]_i$ in isolated carotid body glomus cells of the neonatal rat
K.J. Buckler and R.D. Vaughan-Jones 228

(Na^+–K^+–Cl^-) co-transport and chloride accumulation in arterial smooth muscle from normotensive rats and rats with deoxycorticosterone acetate (DOCA)/salt hypertension, measured *in vitro*
J.P.L Davis, A.R. Chipperfield and A.A. Harper 229

Second messenger signals in cultured, human sweat gland epithelia
S.M. Wilson, C.M. Lee, G.L. Smith, J.D. Pediani, U.M.O. Brown and H.Y. Elder 230

Functional evidence for somatostatin SS-2-like receptors on human colonic epithelial cell line (HT29-19A)
G.O. Barbezat, N.B. Higgs, A. Tonge, L.A. Turnberg and G. Warhurst 231

The relation between intracellular pH (pH_i) and force in isolated rat uterus: simultaneous measurements of pH_i and force
Michael Taggart and Susan Wray 232

Regulation of potassium permeability of *in vitro* human placental brush-border membrane vesicles by arachidonic acid
M. Vatish and C.A.R. Boyd 233

The effects of acetylcholine on rhythmically active spinal neurones in *Xenopus* embryos
Ray Perrins and Alan Roberts 234

The topography of the vagal motor column in anaesthetized *Xenopus laevis*
Y.M. Ihmied and E.W. Taylor 235

Localized morphological changes in sciatic pool motoneurons following neonatal nerve injury at 5 days in the rat
G.M. O'Hanlon and M.B. Lowrie 236

Neurones in the intermediate and medial part of the hyperstriatum ventrale (IMHV) of freely moving chicks respond to visual and/or auditory stimuli
M.W. Brown and G. Horn 237

An association between imprinting and spontaneous neuronal activity in the hyperstriatum ventrale of the anaesthetized domestic chick
C.M. Bradford and B.J. McCabe 238

Corneal inputs to neurones in the spinal trigeminal nucleus of anaesthetized rats
Miguel A. Pozo and Fernando Cervero 239

Plastic changes of spinal nociceptive neurones induced by noxious visceral stimulation in the anaesthetized cat
Fernando Cervero, Jennifer M.A. Laird and Miguel A. Pozo 240

Modulation by endogenous opioids of reflexes evoked by mechanical stimulation of the heel in the decerebrated and spinalized rabbit
R.W. Clarke, J. Harris and Andrea K. Houghton 241

The electrophysiological properties of rat primary afferent neurones with carbonic anhydrase activity or peripherin-like immunoreactivity
E. Prabhakar and S.N. Lawson 242

Poster Communications

The effects of posterior cerebellar vermal lesions on the hypothalamic defence response in the urethane-anaesthetized rabbit
D.J. Bradley, M.A. Goring and K.M. Spyer 243

[^{3}H]5-HT binding to isolated segments of human coronary artery, internal mammary artery and saphenous vein: anatomical localization and binding characteristics
P. Dahm, M. Bodelsson, K. Tornebrandt, J.R. Muddle, R.M. Sykes, M. Yacoub and M.R. Dashwood 244

Postjunctional α-adrenoceptor subtypes in the isolated equine saphenous vein and digital artery
C.E. Bryant and K.W. Clarke 245

The localization of vagal preganglionic neurones in the ferret, *Mustela putorius furo* and the mink, *Mustela vison*
R.N. Ranson, P.J. Butler and E.W. Taylor 246

Glutamate- and GABA-immunoreactive nerve terminals in the nucleus tractus solitarius of the cat revealed by ultrastructural immunogold staining
T.F.C. Batten, A. Maqbool, S. Saha, P.A. Berry and P.N. McWilliam 247

The stability of cutaneous vasodilatation responses elicited by stimulation of saphenous nerve Aδ fibres in the anaesthetized rat
J. Kolston and S.J.W. Lisney 248

Peripheral administration of cholecystokinin (CCK) results in the expression of *fos*-like immunoreactivity in the brainstem of the rat
S.M. Luckman 249

Differential effects of a TRH analogue on fore- and hindpaw footfall patterns in the rat
K.A. Clarke 250

Afferents to and projections from the suprachiasmatic nucleus in the Syrian hamster
R.E.J. Dyball, P. Chatrath, F.J.P. Ebling and M.H. Hastings 251

The responses of neurones, in the deep dorsal horn of rat spinal cord slices *in vitro*, to the application of neurokinin agonists are correlated with their responses to peripheral nerve stimulation
R. Morris, L. Bleazard and R.G. Hill 252

Plasma vasopressin and aldosterone concentrations and urinary excretion in camels subjected to dehydration and rehydration in hot, dry and mild, humid environments
M.R. Achaaban, Mary L. Forsling, R.J. Balment, A. Ouhsine and R.C. Schroter 253

Nerve growth factor may mediate the increase in neuropeptide Y mRNA levels in PC12 cells through activation of protein kinase C
D. Balbi and Janet M. Allen 254

Factors influencing sympathetic nerve activity to the tail of the anaesthetized rat
Christopher D. Johnson and Michael P. Gilbey 255

Anatomical analysis of projections from the hypothalamus to different subdivisions of the periaqueductal grey in the rat
B.M. Lumb and F.M. Semenenko 255

Newcastle Meeting

Demonstrations

Transcytosis of particulates by rabbit M cells studied by confocal microscopy
Mark A. Jepson, Nicholas L. Simmons, Tor C. Savidge, Peter S. James and Barry H. Hirst 258

Real-time measurement of lumen sizes in a network of blood vessels using image analysis
V.A. Moss 259

Isolation, culture and functional analysis of glands from human endometrium
C.J. Matthews, G.T.A. McEwan, C.P.F. Redfern, E.J. Thomas and B.H. Hirst 260

Computer-assisted learning in a physiology teaching laboratory
G.G.R. Green and D.J. Sanders 261

Computer based data collection system for practical class teaching
G.G.R. Green, R. Melrose, J. Wray and D.J. Sanders 262

An objective and light guide system to convert any simple microscope into a microspectrofluorimeter
H. Otun, I. Harvey, J.R. Greenwell and J.I. Gillespie 263

Fluctuations in intracellular free calcium ($[Ca^{2+}]_i$) in single isolated bovine aortic endothelial cells in response to adenosine trisphosphate
J.I. Gillespie, M. Lynch, Carol Johnson and J.R. Greenwell 264

The application of slow scan cooled integrating charge coupled devices (CCD) to the measurement of intracellular free calcium (Ca^{2+}) in single isolated mammalian cells
J.R. Greenwell, Juliet Nicholls, I. Harvey and J.I. Gillespie 265

Measurement of pH_i in intact epithelial monolayers of MDCK cells
C.D.A. Brown and N.L. Simmons 266

Intracellular recordings from neurones of the whole cochlear nucleus of the mouse *in vitro*
E. Agar, G.G.R. Green and D.J. Sanders 267

The centenary of hormone replacement therapy in thyroid disease in man by Dr G.R. Murray of Newcastle upon Tyne
T. Scratcherd 268

Cell-attached patch recording of single Na-activated K channels ($I_{K(Na)}$) from intact guinea-pig ventricular myocytes, perfused with Ca- and Mg-free Tyrode solution
Glenn C. Rodrigo 269

The competition for the Physiological Society logo: the entries so far
J.I. Gillespie 269

Communications

Ocular pursuit over a structured background in subjects with Parkinson's Disease and cerebellar lesions
R. Worfolk and G.R. Barnes 270

The influence of vision on the accuracy of reaching movements in patients with cerebellar disease
B.L. Day, P.D. Thompson, A.E. Harding and C.D. Marsden 271

Cutaneous conditioning of the stretch reflex in muscles of the human forearm
M. Sato, J.C. Rothwell and C.D. Marsden 272

Development of the pincer grasp and its relationship to the development of adult corticospinal delays in man
C. Watts, J.A. Eyre, S. Kelly and V. Ramesh 273

Is the corticospinal projection to the motoneurones of biceps brachii monosynaptic in the human neonate?
E.A. Conway, J.A. Eyre, S. Kelly, J. de Kroon and S. Miller 274

Magnetic stimulation over the motor cortex in man delays the onset of EMG activity more when a muscle acts as a prime mover than when used as a postural fixator
P. Atchison, J. Caviness, K. Werhahn, J.C. Rothwell, B.L. Day and P.D. Thompson 275

Load-induced inflexion in surface electromyographic (EMG) activity during fatiguing contractions of normal human paraspinal muscle
R.G. Cooper and M.J. Stokes 276

Discontinuous changes in discharge pattern of human motor units
O. Kiehn and T. Eken 277

Influence of electrical stimulation on contractile and histochemical properties of tibialis anterior muscle in paraplegic human subjects
L. Rochester, M.J. Barron, C.S. Chandler, M.A. Johnson, S. Miller and R.A. Sutton 278

Short term voluntary hyperventilation and ischaemic human muscle fatigue
M.J. White and A.K. McConnell 279

Mechanism of human paraspinal muscle wasting with acute low back pain
M.J. Stokes, J.A. Hides, G.A. Jull and D.H. Cooper 280

The CO_2-laser-evoked cerebral potential in humans is not a P300 oddball potential
A.D. Towell and S.G. Boyd 281

The effect of sparseness in distributed representations on the detectability of associations between sensory events
A.R. Gardner-Medwin and H.B. Barlow 282

Does the human visual system combine information from motion analyses at different spatial scales?
A.M. Derrington and P.A. Goddard 283

Short-term learning in vernier acuity in humans
Manfred Fahle 284

Facial features and axis of symmetry extracted using natural orientation information
L. Bowns and M.J. Morgan 285

Relative sensitivity to colour and luminance gratings in human observers and monkey parvocellular neurones
A.M. Derrington 286

Representing image velocity in a self-organized artificial neural network
K.N. Gurney and M.J. Wright 287

A biologically plausible scheme for measuring image velocity
A. Johnston, P.W. McOwan and H. Buxton 288

Spatial frequency selectivity of striate cortical neurones in the anaesthetized cat: velocity *vs.* temporal frequency
Lindsay K. Fothergill and Peter Hammond 289

Small signal sensitivity of muscle-spindle primary endings in the anaesthetized cat
J.E. Gregory, D.L. Morgan, U. Proske and J.J.A. Scott 290

Activity of neurones in area 5 of the cerebral cortex during locomotion in awake cats
I.N. Beloozerova and M.G. Sirota 291

Electrophysiology of dorsal cochlear nucleus neurones in the mouse *in vitro*
E. Agar, G.G.R. Green and D.J. Sanders 292

Monoclonal antibodies to Nerve Growth Factor (NGF) affects the postnatal development of the rat geniculocortical system
N. Berardi, A. Cattaneo, A. Cellerino, L. Domenici, M. Fagiolini, L. Maffei and T. Pizzorusso 293

Intracellular recordings made *in vitro* from an area of the avian forebrain which is known to be essential for early learning
P.M. Bradley, B. Delisle Burns, T.M. King and A.C. Webb 294

Age and NMDA receptor activity in the IMHV of the chick brain slice
P.M. Bradley, B. Delisle Burns, T.M. King and A.C. Webb 295

Modulation by melatonin analogues of neurohypophysial hormone release from the rat hypothalamus *in vitro*
Sharifah Yasin, Mary L. Forsling, A. Costa, D. Sugden and A. Grossman 296

Efflux of [^{3}H]taurine from pre-loaded slices of rat cerebral cortex
R.O. Law 297

Anti-sense oligonucleotides injected with patch clamp techniques reveal involvement of a small GTP-binding protein in the control of exocytosis in rat anterior pituitary cells
P.-M. Lledo, R. Zorec, P. Vernier and W.T. Mason 298

Potassium channels active at resting membrane potential in cultured rat striatal neurones
A.J. Doyle, C.D. Richards and K.T. Wann 299

Activation of cultured HIT-T15 insulinoma cells by glyceraldehyde
L. Best, R. Trebilcock and A.C. Elliott 300

Depletion of neurotransmitters in the autonomic nervous system by Palytoxin
J. Posangi, J.B. Harris, M.A. Zar and S.H. Mead 301

Induction of nitric oxide synthase in cultured murine macrophages modulates intracellular levels of L-arginine and L-citrulline
A.R. Baydoun, R.G. Bogle, J.D. Pearson and G.E. Mann 302

Lack of brain nitric oxide synthase in human cavernosal tissue
R.S. Pickard, P.H. Powell, M.A. Zar, D.S. Bredt and S.H. Snyder 303

Changes in intracellular free calcium ($[Ca^{2+}]_i$) in single isolated bovine aortic endothelial cells as a result of bathing in solutions with nominally free calcium
J.I. Gillespie, Carol Johnson, M. Lynch and J.R. Greenwell 304

A large conductance anion channel in cultured bovine aortic endothelial cells
G.G. MacGregor and P.J. Kemp 305

Amino acid deprivation stimulates L-glutamine transport in cultured human venous endothelial cells
L.A. Madge, A.R. Baydoun, J.D. Pearson and G.E. Mann 306

Fast changes in intracellular pH (pH_i) following alteration of external pH (pH_o) in isolated vascular smooth muscle cells from rat mesenteric arteries
Clare Austin and Susan Wray 307

Altered characteristics of the inward calcium current associated with hypertrophy in isolated human detrusor smooth muscle cells
C.R.R. Gallegos, B.S.I. Montgomery and C.H. Fry 308

The modulation of intracellular calcium transients in single cultured human myometrial cells by the oxytocin antagonist F327
S. Thornton, L.C. Anson, J.I. Gillespie and W. Dunlop 309

The effects of extracellular chloride removal on isolated guinea-pig cardiac muscle
C.H. Fry, S.K. Hall and H. Griffiths 310

Effects of temperature on unitary L-type calcium channel currents carried by barium in isolated guinea-pig ventricular myocytes
T.J.A. Allen and R.A. Chapman 311

The action of thimerosal on calcium-dependent currents in mouse isolated pancreatic acinar cells
P. Thorn and P. Brady 312

Inhibition of Ca^{2+}-activated K^+ currents in isolated type I cells of the neonatal rat carotid body by *p*-chloromercuribenzenesulfonic acid
C.N. Wyatt and C. Peers 313

The effect of trypsin treatment on dextran-induced erythrocyte aggregation
N.Z. Ertan, M.W. Rampling, P. Winlove, P. Gribbon, D. Denison and C. Boxall 314

The hyperpolarization in *Xenopus* oocytes induced by lowering external sodium
B. Cardinaud and J.A. Coles 315

Erythrocyte lactate transport in patients with chronic renal failure
Carlos E. Poli de Figueiredo, J. Clive Ellory and B.M. Hendry 316

Renal Haemodynamic Reserve (RHR) during normal human pregnancy
S.N. Sturgiss, R. Wilkinson and J.M. Davison 317

The effect of ovariectomy and oestrogen replacement on the renal actions of vasopressin in the rat
Mary L. Forsling, Yan Zhou and R.J. Windle 318

The role of the renin-angiotensin system in the cardiovascular response to systemic hypoxia in the anaesthetized rat with P_{a,CO_2} maintained
A.-M. Louwerse and Janice M. Marshall 319

Phentolamine increases the incidence of fetal breathing movements both in normoxia and in hypoxia in term fetal sheep
D.A. Giussani, P.J. Moore., L. Bennet, J.A.D. Spencer and M.A. Hanson 320

Respiratory and circulatory responses to electrical and chemical stimulation in the parabrachial complex (PB) of the anaesthetized rat
J.P. Lara, M.J. Parkes, P.N. Izzo and K.M. Spyer 321

The adult rat spinal cord *in vitro*: a novel preparation for recording from lateral horn cells
D.I. Lewis, E. Sermasi and J.H. Coote 322

Cerebrovascular perfusion of the rabbit brain: a method that permits evaluation of compounds in effluent samples
F. Domer, B. Alexander, P. Milner, P. Bodin and G. Burnstock 323

Optical recording of electrical activity in the rat nucleus tractus solitarii *in vitro*
J.F.R. Paton, W.T. Rogers, J.S. Schwaber, A.L. Obaid, S. Rohr and B.M. Salzberg 324

The effect of magnetic force on the movement of myosin-coated beads along actin cables in an algal cell
Richard Tregear, Kazuhiro Oiwa, Shigeru Chaen and Haruo Sugi 325

Characteristics of glucose transport by human and pig colonocyte basolateral membrane
Stuart A. Pinches, Gwyn W. Gould, Andrew Garner and Soraya P. Shirazi-Beechey 326

Expression of the Na^+–glucose co-transporter (SGLT1) gene in rabbit small intestine
T.C. Freeman and D.J.S. Sirinathsinghji 327

Regulation of intestinal Na^+–glucose co-transporter expression in sheep
S.P. Shirazi-Beechey, L. Lescale-Matys, J. Dyer, T.C. Freeman, D. Scott and E.M. Wright 328

The effect of quinidine on the inhibition of glucose exits in human erythrocytes and on the optical responses in the absence of glucose
G.F. Baker and W.F. Widdas 329

Functional isolation of amino acid transport system y^+L in human erythrocytes using *N*-ethylmaleimide
R. Devés, S. Angelo and P. Chávez 330

Vitamin E deficiency, lipid peroxidation and rat small intestinal function *in vitro*
K.J. Lindley, D.P.R. Muller and P.J. Milla 331

Control of chromogranin A biosynthesis in rat gastric corpus
R. Dimaline, A.K. Sandvik, A. Watkinson and G.J. Dockray 332

The influence of vascular and lumenal hexoses on rat isolated intestinal basolateral membrane glucose transport
C.I. Cheeseman, R. Tsang and Z. Ao 333

Effects of phorbol ester on vagal stimulation and secretagogue-evoked secretory responses in the rat pancreas
D. Wisdom, L.P. Francis, J. Singh, G.M. Salido and P.J. Camello 334

Soma size and location within the ganglion of electrophysiologically identified myenteric plexus neurons in the guinea-pig ileum
I.W.M. Schutte, A.B.A. Kroese and L.M.A. Akkermans 335

Cholecystokinin binding sites on vagal affferent fibres in the rat
E.R. Forster and G.J. Dockray 336

Role of nitric oxide and vasoactive intestinal polypeptide in vagally mediated relaxation of the gastric corpus in the anaesthetized ferret
D. Grundy, M.K. Gharib-Naseri and D. Hutson 337

Gastric emptying after repeated drinking in man
G.E. Vist and R.J. Maughan 338

The influence of distension on the activity of the pyloric antrum in the conscious dog
T. Scratcherd 339

Gut giant contractions and associated defaecation in ambulant dogs
Mark Scott, Marie-Anne Pilot and Norman Williams 340

Oscillatory phenomena in the pancreatic circulation of cat and ferret in response to adrenergic stimulation
T. Scratcherd, D. Hutson and J.R. Greenwell 341

A transport pathway responsible for the increased permeability of malaria-infected erythrocytes shows characteristics of a Cl^- channel
Kiaran Kirk, Barry C. Elford, J. Clive Ellory and Chris I. Newbold 342

Involvement of calmodulin and PKC in regulation of Ca^{2+}-activated K^+ (Rb^+) efflux in human colonic cell line, HT29-19A
K.E. Fogg, N.B. Higgs, J. Grundy and G. Warhurst 343

Maxi-K^+ channels on epithelial cells cultured from human fetal vas deferens
C.J. Mathews, Y. Sohma, Ann Harris, Julie A. Chambers and B.E. Argent 344

Acute regulation of the macroscopic chloride conductance of isolated rat pancreatic duct cells
M.A. Gray and S. Plant 345

Inhibition by 4,4'-diisothiocyanostilbene-2,2' disulphonic acid (DIDS) separates volume and cAMP-activated Cl^- conductances in intact T84 epithelial monolayers
G.T.A. McEwan, B.H. Hirst and N.L. Simmons 346

ACh-evoked $[Ca^{2+}]_i$ signals are augmented in isolated rat lacrimal acinar cells bathed in Na^+-free medium
S. Yodozawa and A.C. Elliott 347

Immunological detection of nucleoside transporters in human placental trophoblast brush-border plasma membranes and placental capillary endothelial cells
L.F. Barros, N. Beaumont, S.M. Jarvis, J.D. Young, P.J.F. Henderson, D.L. Yudilevich, C. Thrasivoulou and S.A. Baldwin 348

Discrimination between two lysine transporters in human placental brush-border membrane vesicles by altering membrane potential
N. Eleno, R. Devés and C.A.R. Boyd 349

Platelet-aggregation inhibiting activity of human placental syncytiotrophoblast brush-border membrance vesicles
H. Iioka, I.S. Moriyama and M. Ichijo 350

Direct evidence of fluid uptake into rat descending colonic crypts
R.J. Naftalin and K.C. Pedley 351

Electrogenic colonic ion transport in human Hirschsprung's disease
S.P. Hardy 352

Linear impedance of isolated frog skin measured over a wide frequency range
Y. Sohma, H. Yoshida and Y. Imai 353

The effect of prostaglandin E_2 on agonist-sensitive cAMP accumulation in the distal convoluted tubule isolated from rabbit kidney
C. Brick-Ghannam, D. Chabardes, N.M. Griffiths and S. Siaume-Perez 354

Positive and negative regulation of small-conductance chloride channels in the basolateral membrane of rabbit parietal cells
H. Sakai and N. Takeguchi 355

Whole-cell currents in epithelial cells from rat choroid plexus *in vitro*
T. Kotera and P.D. Brown 356

Poster Communications

Characteristic cell types and network modelling in the cardiorespiratory region of the nucleus of the solitary tract (NTS) of the rat
Julian F.R. Paton, William R. Foster, Eliza B. Graves and James S. Schwaber ... 357

Transport of sodium into apical membrane vesicles prepared from sheep tracheal epithelium
F.P. Gillian Ridge, Mercedes Acevedo, Richard E. Olver and Martyn R. Ward 358

Heterogeneity of epithelia in rabbit gut-associated lymphoid tissues
Mark A. Jepson, Nicholas L. Simmons and Barry H. Hirst 359

K^+ channels on rat pancreatic duct cells *in vitro*
Susan Plant, M.A. Gray and B.E. Argent 360

Investigations of the enteric neural involvement in the maintained electrogenic hypersecretion induced by *E. coli* STa in chronic undernourished rat small intestine *in vitro*
Helen Nzegwu and R.J. Levin 361

Bradykinin and glucose transport across the brush-border and basolateral membranes of isolated rat jejunal enterocytes
E.S. Debnam and P.A. Sharp 362

Acetylcholine activates electrogenic secretion in rat jejunum and ileum *in vitro* by M3 muscarinic receptors
S.A. Przyborski, R.J. Levin and A. Young 363

Morphometry of the liver after orthotopic liver transplantation in the rat: significance of an intact arterial supply
D. Zhao, A. Zimmermann and A.M. Wheatley 364

HCl and pepsinogen secretion by the isolated gastric oxynto-peptic cell of the amphibian
M.C. Ruiz, M.J. Abad, A. Acosta and F. Michelangeli 365

Sennoside and loperamide: opposing motor effects in vascularly perfused rat large bowel *in vitro*
P.E. Squires, R.D.E. Rumsey and N.W. Read 366